

ABSTRACT OF DISCLOSURE

A high-efficiency power supply apparatus used with a driving system of a display panel and a method of designing the same to improve an electrical power efficiency by providing a non-isolated direct current (DC) power directly to a display panel driving circuit comprise: a DC power supplying circuit to improve a power factor by rectifying an alternating current (AC) power and generating the non-isolated DC power, which is not isolated from the AC power, and an isolated DC power; a display panel driving circuit to generate various driving signals for driving the display panel with the non-isolated DC power; and a video signal processing circuit to perform a predetermined video signal processing for generating data to drive the display panel with the isolated DC power.